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|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/809,657 | UCKERT ET AL. | |
| | Examiner | Art Unit | |
| | Ling-Siu Choi | 1713 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS**. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to the Amendment filed 01/16/2007.
2. The allowed claim(s) is/are 1-7,9,13-17 and 19-21.
3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some*
 - c) None
 of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other Supplemental Office Action.

| | | |
|---|---------------------------|------------------|
| <u>Supplemental</u> Office Action Summary | Application No. | Applicant(s) |
| | 10/809,657 | UCKERT ET AL. |
| | Examiner Ling-Siu Choi | Art Unit 1713 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) ____ is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 March 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: ____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. This Office Action is in response to the Amendment filed 01/16/2007. Claims 8, 10-12, and 18 were canceled and claims 1-7, 9, and 13-17, and 19-21 are now pending, wherein claims **1-7, 9, and 13** are drawn to a copolymer and claims **14-17** and **19-21** are drawn to an electronic device.

Examiner's Amendment

2 An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CAR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. John H. Lamming on January 26, 2007.

3. The application has been amended as follows:

In the Specification, page 1, below the title "BACKGROUND OF THE INVENTION", insert the following paragraph:

--This application is a Divisional of US Application No. 10/137,898, filed May 02, 2002, now US Patent No. 7,074,885, which claims the benefit of 60/288,314, filed May 03, 2001.--

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Claim 1, line 1, change "A copolymer comprising" to --A copolymer consisting essentially of--;

Claim 1, lines 2-3, delete "formula selected from the group consisting of";

Claim 1, lines 29-30, delete "provided that when adjacent R groups form a ring, R¹ cannot be aryl or heteroaryl";

Claim 21, line 2, change "copolymer of formula" to --copolymer consisting essentially of--;

Claim 21, line 4, delete "formula selected from the group consisting of";

Claim 21, lines 31-32, delete "provided that when adjacent R groups form a ring, R¹ cannot be aryl or heteroaryl".

Allowable Subject Matter

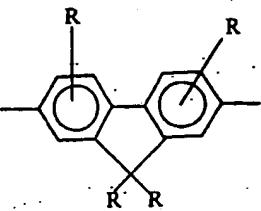
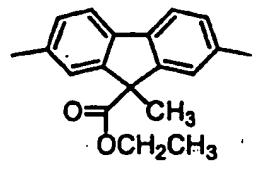
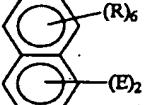
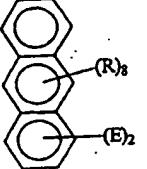
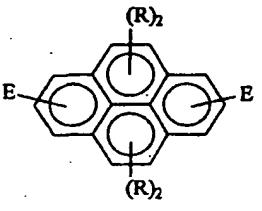
4. Claims 1-7, 9, 13-17, and 19-21 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Inbasekaran et al. (US 5,777,070), Kreuder et al. (US 5,763,636 ≈ US 5,621,131), Kim et al. (US 5,876,864), and Kim et al. (US 5,807,974).

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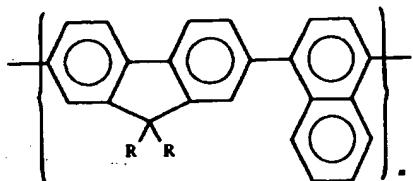
Summary of Claim 1:

| A copolymer comprising | | |
|------------------------|---|---|
| 1 | at least one first monomeric unit: | |
| |  I | |
| |  I(a) | |
| 2 | at least one second monomeric unit selected from fused ring aromatic groups: | |
| |  VI |  VII |
| |  VIII | |
| | <ul style="list-style-type: none"> • R is selected from H, alkyl, aryl, heteroalkyl, heteroaryl, F, CN, -OR¹, -COOR¹, -C_ψH_θF_λ, -OC_ψH_θF_λ, -SR¹, -N(R¹)₂, -P(R¹)₂, -SOR¹, -SO₂R¹, -NO₂, and R²-(C=O)-CH [(CH₂)_δ](C=O)-R² ($\delta = 0 - 12$) | |
| | Formula VI | Formula VII |
| | <ul style="list-style-type: none"> • E is a single bond or a linking group selected from arylene and heteroarylene | |
| | two E: 1,4-, 1,5-, 1,8-, 2,3-, or 2,6-position | two E: 1,4-, 1,5-, 1,8-, 2,3-, 2,6-, or 9,10-position |
| | ^{1ST} E: 1, 2, 3 position ^{2ND} E: 6, 7, 8 position | |
| | when R is H, alkyl, F, -CN, -OR ¹ , or -COOR ¹ in formulae VI, VII, and VIII, the copolymer further comprises end-capping groups that are aromatic | |

Inbasekaran et al. disclose a copolymer of 9,9-di-n-octylfluorene and naphthalene (Example 3). Inbasekaran et al. further disclose that the copolymer is used

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in electroluminescent (EL) devices (from line 13 of col. 6 to line 61 of col. 8).



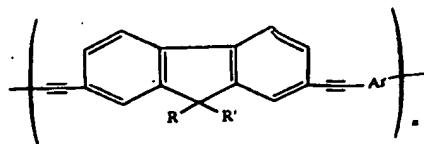
However, Inbasekaran et al. do not teach or fairly suggest the claimed polymer and the device comprising it.

Kreuder et al. disclose a conjugated polymer represented in the general Formula (I):



wherein n and p = 0, 1, 3, or 4; m = 1, 2, 3, or 4 (abstract; claim 1). Kreuder et al. further disclose that Ar⁵ or Ar⁶ can be anthracene or pyrene (claim 1; claim 9 - col. 20, line 45; col. 21, line 5). However, Kreuder et al. do not teach or fairly suggest the claimed polymer and the device comprising it.

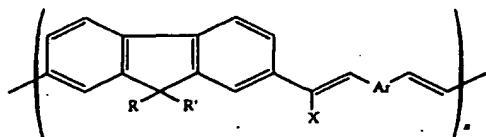
Kim et al.'864 disclose a fluorene based alternating polymer to be used in photoluminescence and electroluminescence device:



wherein Ar can be naphthalene or anthracene (abstract; Example 9; col. 15, line 9; claim 1). However, Kim et al.'864 do not teach or fairly suggest the claimed polymer and the device comprising it.

Kim et al.'974 disclose a fluorene based alternating copolymer to be used as light

emitting materials for an electroluminescent device:



wherein Ar can be naphthalene or anthracene (abstract; col. 5, line 55; col. 6, line 5; claim 1). However, Kim et al.'974 do not teach or fairly suggest the claimed polymer and the device comprising it.

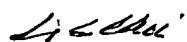
In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

February 1, 2007